

# Investigation of Color Decomposition for Textile Printing Materials

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**Abstract :** The hydrolysis of some vinylsulfonyl (VS) typed reactive dyes were investigated at the pH, temperature and other experimental conditions. The hydrolytic behaviour, especially, stability in various pH value, of the water soluble reactive dyes are examined. In neutral and acid condition, mother dyes are a quite stable. Other hand, it was found that dimerization and decomposition for these dyes were estimated in an aqueous alkaline medium. These alkaline hydrolysis behaviour was monitored by the high performance liquid chromatography.

## 1. Introduction

Organic color chromophores for textile printing materials require a specific design and a performance is necessary to make sure that the desired chromophore properties fit for the selected application. In general, the four-color process, especially, printing industry is very well known. It involved the use of three subtractive primaries, cyan, magenta and yellow, with black reactive dyes. The hydrolysis reaction of reactive chromophores in an aqueous alkaline solution rely on several factors, for example, the dye structure (the nature of the reactive system, of the chromogen<sup>1-3</sup>, and of the bridging link)<sup>4-6</sup>, the temperature, the pH value of the medium and the physical state of the dye in the solution<sup>7</sup>. Furthermore, this hydrolysis takes place already in the dye solution before printing on textile.

## 2. Results and Discussion

The reactive red, magenta and black 49 by adding of phosphate buffer into solution and simultaneously by heating of the solution above 40°C, 60°C and 90°C. The contents of hydrolytic products in dye lots were measured by using HPLC method.

## Chromatographic condition;

Apparatus	HP 1040A
Column	Merck RP-18 (5 $\mu$ m)
Mobile phase	10mM(NH <sub>4</sub> )HPO <sub>4</sub> :Methanol(v/v)=50:50
Flow rate	0.5ml/min
Temperature	25°C
Detector	1040A DAD 530 nm(reactive dye 3), 550 nm(reactive dye 218), 590 nm(reactive dye 5)

## Some of the relate dyes for textile printing properties are:

Coloristic	Transparency
	Color strength
	Purity (color)
Fastness	Light
	Thermal
	Solvents/Acid, etc
Technical	Dispersibility
	Electrostatic properties
	Viscosity influence

Dye Name	Chemical structure	Color	$\lambda_{max}$
Reactive Dye 3	Azo	Red	530
Reactive Dye 218	Azo	Magenta	550
Reactive Dye 5	Azo	Black	590

## 3. Conclusion

To examine their colour decomposition properties, particularly pH changes effects

## 4. References

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